CLAIMS

We claim:

1. A method for preparing a multilayer composite article by spray up operation, comprising the steps of:

applying a gel coat composition into a mold;

optionally applying a barrier coat over the gel coat; and

applying a laminate formula into the mold over the gel coat or optional barrier coat,

wherein the laminate formula comprises reinforcing fibers dispersed in a polymeric matrix, and

wherein the gel coat comprises a urethane acrylate resin curable at a temperature of 50° C or less.

2. A method according to claim 1, wherein the gel coat is applied to a thickness of 0.2-2 mm, the barrier coat is applied to a thickness of 0.5-5 mm, and the laminate is applied to a thickness of 1-10 mm.

3. A method according to claim 1, wherein the thickness of the article is from 2-15 mm.

4. A method according to claim 1, wherein the article is an automobile body panel.

5. A method according to claim 1, further comprising the step of curing the article at a temperature of 50°C or less.

6. A method according to claim 1, further comprising the step of curing the article at a temperature of 30°C or less.

7. A method according to claim 1, wherein the barrier layer comprises reinforcing fibers in a polymeric matrix, wherein the length of the reinforcing fibers is 1 mm or less.

8. A composite article comprising a gel coat layer, a laminate layer, and a barrier layer disposed between the gel coat and laminate, wherein the laminate layer comprises reinforcing fibers in a cured polyester resin and the gel coat comprises a cured polyester polyurethane acrylate resin,
wherein the gel coat layer forms a surface of the article that maintains 60% or more of its gloss after exposure to 4500kJ/$m^2$ of ultraviolet radiation.

9. A composite article according to claim 8, wherein the composite article comprises an automobile body panel.

10. An article according to claim 8, wherein the total thickness of the article is 2-12 mm.

11. An article according to claim 8, wherein the total thickness of the article is 3-8 mm, the thickness of the gel coat is 0.5-1.5 mm, the thickness of the barrier coat is 0.75-2 mm, and the thickness of the laminate layer is 1-5 mm.

12. An article according to claim 8, wherein the reinforcing fibers comprise glass fibers having a length of 6 mm or greater.

13. An article according to claim 8, wherein the laminate layer comprises a cured dicyclopentadiene unsaturated polyester resin.

14. An article according to claim 8, wherein the density of the laminate layer is 1.2 g/$cm^3$ or less.

15. A method for making a multilayer composite, comprising the steps of:

applying a gel coat layer to a mold surface;

applying a barrier coat layer onto the gel coat in the mold;

hand laying a glass cloth on top of the barrier coat layer; and

applying a laminate resin composition to the glass cloth,

wherein the laminate resin composition comprises 70% or more by weight of an unsaturated polyester resin and up to 25% by weight hollow microspheres, and

wherein the gel coat comprises a curable polyester polyurethane acrylate resin.

16. A method according to claim 15, further comprising curing the composite at a temperature of 50°C or less.

17. A method according to claim 15, further comprising curing the composite at a temperature of 30°C or less.

18. An automobile body panel, comprising a cured multilayer composite article comprising:

a gel coat layer;

a laminate layer; and

a barrier layer disposed between the gel coat layer and the laminate layer,

wherein the laminate layer comprises reinforcing glass fibers in a matrix of a cured polyester resin, and

wherein the gel coat forms a surface of the body panel that maintains 60% or more of its gloss after exposure to 4500 $kJ/m^2$ of ultraviolet radiation.

19. A body panel according to claim 18, wherein the gel coat layer comprises a cured polyester polyurethane acrylate resin.

20. An automobile body panel according to claim 18, wherein the body panel has a class A finish.

21. An automobile body panel according to claim 18, wherein the maximum thickness of the body panel is about 6 mm.

22. An automobile body panel according to claim 18, wherein the maximum thickness of the body panel is about 4 mm.

23. An automobile body panel according to claim 18, wherein the gel coat has a thickness of 0.5 – 1.5 mm.